

PARENT-ADOLESCENT COMMUNICATION ABOUT SEX AND CONDOM USE
AMONG YOUNG MEN WHO HAVE SEX WITH MEN:
AN EXAMINATION OF THE THEORY
OF PLANNED BEHAVIOR

by

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ABSTRACT

Young men who have sex with men (YMSM) are at disproportionate risk for HIV infection. Parent adolescent communication about sex, particularly mother-adolescent communication, has a protective influence on adolescent sexual risk behavior. However, it is unclear whether these findings generalize to YMSM. The current study used the theory of planned behavior as a framework to examine how parent adolescent communication about condoms is associated with determinants of condom use behavior among YMSM. A measure of parent adolescent communication about condoms among YMSM was developed based on qualitative data.

Five hundred and forty-three YMSM ages 14 – 18 ($M=16.60$) who were “out” to at least one parent completed an online cross-sectional survey. YMSM reported on communication with mothers and fathers separately, data were analyzed separately for each parent, and YMSM were included in each analysis only if that respective parent knew they were gay or bisexual.

The same factor structure of parent-adolescent communication about condoms was identified for data about mothers and fathers. Structural equation models were estimated. Facets of mother-adolescent communication were associated with attitudes about condoms, subjective norms for condom use, perceived behavioral control, intentions to use condoms, and indirectly, instances of condomless anal intercourse. Only quality of father communication was associated with norms and behavioral control.

Parent-adolescent communication about condoms is associated with determinants of condom use behavior among YMSM, and mother communication exerted an indirect influence on HIV-related sexual risk behaviors. Interventions designed to enhance parent-adolescent communication about condoms could prove efficacious in reducing HIV infections among YMSM.

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INTRODUCTION

HIV Epidemic Among YMSM

Men who have sex with men (MSM) in the United States continue to be disproportionately burdened by the HIV epidemic. Approximately two-thirds of the roughly 50,000 new HIV infections in the United States each year are among MSM (Centers for Disease Control and Prevention [CDC], 2015). Because this group makes up only about 2% of the total population of the country (CDC, 2015), epidemiological data indicate these individuals need to receive continued prioritization for HIV prevention efforts.

Young men who have sex with men (YMSM) are the most severely affected group of MSM in the United States (CDC, 2009, 2010; Prejean et al., 2011). For the purposes of surveillance data, the Centers for Disease Control (CDC) define YMSM as males ages 13 – 24 who have had sexual contact with another male (CDC, 2012b). About 13% of new HIV infections are among individuals aged 13 – 24 each year, and more than half of these infections result from male-to-male sexual contact (CDC, 2008, 2009). Prevalence of HIV among YMSM is extremely high, and researchers have estimated that 7.2% to 12.6% of YMSM ages 15 – 24 are infected with HIV (Balaji, Bowles, Le, Paz-Bailey, & Oster, 2013; CDC, 2016; Valleroy et al., 2000). Black/African American YMSM are at particular risk for HIV infection, and prevalence in this group has been estimated as high as 16.5% (Balaji, Bowles, Le, Paz-Bailey, & Oster, 2013).

While HIV infection rates have held relatively stable for more than a decade in the United States (CDC, 2012b), infection rates among YMSM via male-to-male sexual contact continue to increase each year (CDC, 2015). The most recent CDC surveillance data indicate that HIV infections among YMSM increased from 7200 new infections in 2008 to 8800 new infections in 2010, an increase of 22% (CDC, 2012b, 2015). Rates of new infections have increased most markedly among Black/African American and Latino/Hispanic YMSM (CDC, 2012a, 2015).

However, no effective intervention strategies have been developed to reduce HIV-related sexual risk behaviors in samples of YMSM with a mean age less than 23 (Mustanski, Garofalo, Herrick, & Donenberg, 2007). Parents play a key role in shaping the sexual attitudes and behaviors of all adolescents, and researchers have pointed to parents of YMSM as an untapped source of support for future intervention approaches with YMSM (Garofalo, Mustanski, & Donenberg, 2008).

Parent-Adolescent Communication About Sex

Research with heterosexual adolescents has repeatedly indicated that parents have a significant influence on the sexual attitudes and behaviors of their adolescents. Reviews of the literature have revealed that parental monitoring, parental disapproval of teen sex, overall parent-adolescent relationship quality, and parent-adolescent communication about sex all have important implications for what attitudes adolescents hold about sex, when adolescents begin engaging in sexual behaviors, and how frequently adolescents engage in risky sexual behaviors, including HIV-related sexual risk behaviors (for reviews, see Buhi & Goodson, 2007; Markham et al., 2010).

Parent-adolescent communication about sex is a promising avenue for reduction of

HIV-related sexual risk behaviors among adolescents. Most parents report they have talked with their adolescent about sexual topics (DiIorio, Pluhar, & Belcher, 2003; Hadley et al., 2009; Jaccard, Dodge, & Dittus, 2002; Markham et al., 2010; Rosenthal & Feldman, 1999; Widman, Choukas-Bradley, Helms, Golin, & Prinstein, 2014), and parents typically address a wide range of sexual topics throughout these discussions, including when to start having sex, choosing sex partners, sexually transmitted diseases, HIV/AIDS, and methods of contraception (DiIorio et al., 2003; Hadley et al., 2009; Wilson & Donenberg, 2004).

A recent meta-analysis found that parent-adolescent communication about sex is associated with increased contraceptive use among adolescents, including condom use (Widman, Choukas-Bradley, Noar, Nesi, & Garrett, 2015). This study pooled data from 34 studies with a total of 15,046 adolescent participants. Across studies, the association between parent-adolescent communication about sex and contraceptive use had a significant and small effect size for all adolescents, and the effect was larger for girls when compared to boys. In addition, communication with mothers had a stronger effect on safer sex behavior than communication with fathers, and communication with fathers was not significantly associated with sexual behavior.

Parent-adolescent communication about sex has been measured in a variety of ways in previous research, including how frequently adolescents discuss sex with their parents, the quality of parent-adolescent communication about sex, and whether or not adolescents have ever discussed certain sexual topics with their parents. Widman et al. (2015) examined moderation by type of assessment of parent-adolescent communication about sex in their meta-analysis, and they found no differences in the magnitude of the association between communication and sexual behavior with regard to the number of items used to

assess communication about sex, what facet of communication was being assessed (frequency, quality, or perceived self-efficacy), and what content area was being assessed (contraceptive/condom use, sexually transmitted infections/HIV, pregnancy, or general sex topics).

Parent-Adolescent Communication About Sex Among YMSM

Knowledge about how parent-adolescent communication about sex functions within families of YMSM is extremely limited. One previous quantitative study has examined perceptions of parent-adolescent communication about sex and sexual behaviors among YMSM (Thoma & Huebner, 2014). In this study, YMSM who talked about sex with their parents more frequently were not more likely to report that they were sexually active with male partners nor more likely to report having had recent sex with another male. All YMSM in this study identified their sexual orientation as gay, bisexual, or some other nonheterosexual identity, and whether their parents knew about their sexual orientation had important implications for how frequency of parent-adolescent communication about sex was associated with sexual risk behaviors. YMSM whose parents knew they were gay or bisexual who communicated with their parents frequently about sex were more likely to report recent condomless anal intercourse (CAI) with another male. There was no association between communication about sex and CAI for YMSM whose parents were not aware or were uncertain that they were gay or bisexual (Thoma & Huebner, 2014). In other words, more frequent parent-adolescent communication about sex was linked with increased HIV-related sexual risk behaviors, but only for YMSM whose parents knew they were gay or bisexual. Mechanisms underlying this finding were not tested in the study, but the authors hypothesized that communication about sex may have

been linked with risk for “out” YMSM because parents could concurrently send rejecting messages about a child’s sexual orientation while communicating about sex (e.g., “You’re going to get HIV if you have sex.”) (Thoma & Huebner, 2014).

Two previous qualitative studies have also examined parent-adolescent communication about sex among YMSM. Researchers found that approximately half of YMSM interviewed reported their parents do influence their sexual behaviors, and this was especially true for YMSM who were close to their parents and communicated openly with their parents about sex and other topics (LaSala, 2014). Families of YMSM reported significant barriers to discussing sex openly, including parental discomfort with the topic (LaSala, 2014) and sons perceiving their parents as unknowledgeable about same-sex sexual behaviors (LaSala, Fedor, Revere, & Carney, 2015). Finally, a recent study of Black YMSM found that increased frequency of communication about same-sex sexual behaviors was associated with higher odds of testing for HIV within the last 6 months (Bouris, Hill, Fisher, Erickson, & Schneider, 2015).

Although the literature examining parent-adolescent communication among YMSM is limited, researchers have also examined how the family context more generally is associated with HIV-related sexual risk behaviors for this population. Many lesbian, gay, and bisexual (LGB) adolescents report less supportive and positive relationships with their parents (Russell, Seif, & Truong, 2001), particularly after their parents find out they are LGB (Saltzburg, 2004; Savin-Williams, 1998). Overt parental rejection of sexual orientation among LGB adolescents is a common stressor within this population (D’Augelli, 2002; Ryan, Huebner, Diaz, & Sanchez, 2009). LGB young adults who experienced parental rejection during adolescence reported higher levels of HIV-related

sexual risk behaviors in one study (Ryan et al., 2009), indicating that parent behaviors could influence the sexual behaviors of LGB adolescents and young adults, including YMSM.

A Theoretical Framework for Examining Parent-Adolescent Communication About Sex

In summary, previous research with heterosexual adolescents has indicated there is a small association between parent-adolescent communication about sex and increased safer sex behaviors, and little is known about how parent-adolescent communication about sex is associated with sexual behaviors of YMSM. The small amount of variance in adolescent sexual behavior accounted for by parent-adolescent communication about sex could be explained by emphasizing sexual behaviors as outcomes in previous research rather than examining determinants of safe sex behavior that parents could influence more strongly. Adolescent sexual behaviors are shaped by many forces, including opportunities to have sex, peer influences, and the interpersonal dynamics of specific sexual encounters (Kotchick, Shaffer, Forehand, & Miller, 2001; Lohman & Billings, 2008; Stanton et al., 2002; Widman, Noar, Choukas-Bradley, & Francis, 2014). As a result, parent-adolescent communication about sex may not always significantly contribute to adolescent sexual behaviors because other factors become more relevant in the immediate prediction of behavior. For example, an adolescent may intend to use a condom when he has sex with a new partner because he has frequently discussed condom use with his mother, but his partner refuses to use a condom, and they have sex without one. In this case, communication with parents has helped to shape intentions to use condoms, but the behavior does not occur for another reason. Thus, previous studies that have measured only

adolescent sexual behaviors as outcomes may have failed to find larger effects because parent-adolescent communication about sex is only one of many factors contributing to variance in adolescent sexual behavior.

If researchers hope to isolate the specific contributions of parent-adolescent communication about sex to variance in adolescent sexual behavior, approaching this issue from a theory-grounded framework that accounts for adolescent sexual attitudes, norms, self-efficacy, and intentions (Ajzen, 1985; Fisher & Fisher, 2000; Jaccard et al., 2002) would be of benefit. Any associations between parent-adolescent communication about sex and adolescent sexual behaviors are likely mediated through theory-derived constructs (for the purposes of this study, these constructs will be described as “determinants of behavior” going forward) (Jaccard et al., 2002). Examining associations between parent-adolescent communication about sex and determinants of sexual behavior within a well-established theoretical model of sexual behavior might allow researchers to pinpoint components of the model that parents can influence by communicating with their child about sex.

One theoretical framework that has been applied successfully in the prediction of sexual behavior in previous research is the theory of planned behavior¹ (Ajzen, 1985, 1991; Albarracín, Johnson, Fishbein, & Muellerleile, 2001). This theory posits that behavioral intentions predict actual behavior, and intentions are predicted by attitudes about the behavior as well as subjective norms related to the behavior (Ajzen, 1985). Attitudes constitute the perceived positive or negative valence of beliefs about the behavior, and subjective norms are perceived social pressures to either perform or not perform a behavior (Ajzen, 1991). In addition, the theory of planned behavior posits that perceived behavioral control, or perceived self-efficacy to successfully carry out the behavior, is associated with

both behavioral intentions and behavior itself (Ajzen, 1985, 1991).

Using the theory of planned behavior as a guide, we can then examine more specifically which determinants of behavior could be influenced by parent-adolescent communication about sex. There are three aspects of communication that could potentially influence determinants of behavior: 1) whether communication about sex occurs at all, 2) the content of communication about sex (or *what* is communicated), and 3) the process of communication about sex (or *how* these topics are communicated about). Parents send a message to their adolescents about sex based on whether they choose to discuss sexual issues or not (Darling & Hicks, 1982; Voss, 1980). Infrequently or never discussing sex sends the implied message, or metacommunication (Ruesch & Bateson, 2006), to adolescents that sex is a taboo topic that is too personal to discuss openly, or, in more extreme cases, that sex is a shameful activity that must not be discussed at all (Voss, 1980). Metacommunication is also present when certain sexual content areas are discussed frequently, as parents can repeatedly send the implied message that they care about their adolescent's health because they want them to use condoms. Frequently discussing condoms also implies to the adolescent that they are an effective way to prevent HIV and other sexually transmitted diseases and preserve health, even if the parent never says this directly. Previous research has also shown that discussing certain sexual topics is associated with a corresponding change to the relevant behavior (Hadley et al., 2009; Sneed, 2008), and more frequent and detailed communication about certain content areas likely changes adolescents' attitudes, subjective norms, and behavioral control for the corresponding behaviors. The process of communication is often conveyed in nonverbal cues, including affect, tone of voice, and posture during communication (Mehrabian,

1977), and the process of communication about sex could have important influences on determinants of adolescent sexual behaviors. Parents who model comfortable, relaxed communication about condoms likely instill this style in their adolescents, who can then subsequently communicate about condoms more comfortably with their sexual partners, an important component of perceived behavior control for sexual health. Conversely, when parents are feeling upset about their child's sexuality and communicate with anger, frustration, or fear, this can also affect the messages a child receives. For example, research indicates that communicating messages meant to instill fear in the recipient can cause the recipient to evaluate the content of the message with more scrutiny (Johnson, Maio, & Smith-McLallen, 2005). Thus, communicating in a manner that instills fear could cause adolescents to question their parents' advice.

Associations between parent-adolescent communication about sex and determinants of behavior included in the theory of planned behavior have previously been examined in only one study. This study of 171 sexually active Latino/a adolescents examined condom use at last sex as a behavioral outcome (Malcolm et al., 2013). Adolescents who reported higher quality communication with their parents about sexual issues also reported more positive attitudes about condoms, more approving parental norms about condom use, and higher perceived levels of behavioral control with regard to condom use (Malcolm et al., 2013). In turn, adolescents who reported more positive attitudes and higher behavioral control reported higher intentions to use condoms and, subsequently, more consistent condom use (Malcolm et al., 2013). Parental norms about condom use were unassociated with intentions and behavior in this study. Results indicated that parent-adolescent communication about sex does have important associations with upstream determinants of

adolescent sexual behavior within a heterosexual sample.

The Current Study

The current study examines associations between various dimensions of parent-adolescent communication about sex and determinants of sexual behavior among a sample of YMSM. Interview data from a qualitative study of YMSM and their parents were used to inform the current study. Twenty families participated in an interview study ($N = 41$ total family members). Each family was interviewed together and with child and parent(s) alone, and interviews focused on family dynamics, how parents found out their son identifies as gay or bisexual, parent-adolescent communication about sex within the family, parent and adolescent knowledge about HIV, and YMSM attitudes, norms, and intentions with regard to condoms. Emerging themes from qualitative data were analyzed and informed quantitative measures and research questions for the current study, as described below.

The current study was conducted only with YMSM whose parents knew they identified as gay or bisexual (i.e., those who were “out” to their parents). This population was selected for two reasons: 1) parent-adolescent communication about sex has been linked with sexual risk behaviors among YMSM whose parents know they are gay or bisexual (Thoma & Huebner, 2014), and should be examined further, and 2) YMSM whose parents know they are gay or bisexual are the population who could feasibly be targeted with and enrolled in family-focused HIV-prevention efforts, so greater knowledge of how parent-adolescent communication functions in this group is imperative to inform future interventions.

Aim 1

The first aim of the current study was to determine the factor structure of parent-adolescent communication about condoms among YMSM. As noted above, only one known previous quantitative study has examined parent-adolescent communication about sex with a sample of YMSM (Thoma & Huebner, 2014). Little is known about which aspects of communication about sex are salient within this population, and parents and YMSM in our qualitative study described some aspects of communication about sex that are not currently present in the existing literature. Items for measures of frequency and quality of communication were culled from existing measures of parent-adolescent communication about sex that are relevant to YMSM, as well as our qualitative data from YMSM and their parents. Because the current study examines the influence of parent-adolescent communication on determinants of condom use behavior, the items used in the measure of communication all focused on the frequency and quality of communications specifically about condoms.² Factor analysis was conducted to determine the factor structure of items used to measure different facets of parent-adolescent communication about condoms. It was hypothesized that the frequency, openness, knowledgeability/trustworthiness, negative emotionality, and specificity of communication about condoms would emerge as distinct constructs.

Aim 2

The second aim of the proposed study was to examine how constructs of parent-adolescent communication about condoms are associated with determinants of condom use behavior among YMSM. Because of myriad influences on adolescent sexual behavior, it is not expected that each construct of parent-adolescent communication about condoms will

contribute significantly to each facet of the theory of planned behavior, especially components of the model that are furthest “downstream” from communication, such as intentions to use condoms and actual condom use behavior. However, it is expected that communication will be associated with important “upstream” determinants of behavior, such as attitudes, norms, and behavioral control. Structural equation modeling will be used to model collected data, predicting condom use behavior from determinants of condom use behavior as well as constructs of parent-adolescent communication about condoms. Because previous research has pointed to distinct influences of mother and father communication about sex upon adolescent sexual behavior (Widman et al., 2015), data from reports of mother and father communication will be modeled separately. It is hypothesized that more frequent and more specific communication will be associated with more favorable attitudes about condoms. It is hypothesized that higher quality communication (both openness and knowledgeability/trustworthiness) and more specific communication will be associated with higher perceived behavioral control for condom use. It is hypothesized that higher negative emotionality of communication will be associated with lower subjective norms for condom use. To the extent that these associations exist, we will explore whether facets of communication exert further “downstream” indirect effects on condom use intentions and behavior through their associations with attitudes, norms, and behavioral control.

Notes

1. It was originally proposed that additional behavioral determinants that were further upstream from condom use behavior would be included in analyses. These determinants included beliefs about condoms, parental norms, motivation to comply with parental norms, and control beliefs about using condoms. These constructs were initially included when modifying and attempting to sufficiently fit measurement models for both parents, and models evidenced poor fit when these behavioral determinants were included. They were removed from analysis to enhance model fit and to truncate the theory of planned behavior into a form more commonly used within the literature examining condom use behavior (e.g., Kalichman et al., 2002).
2. Items measuring parent-adolescent communication about HIV were initially included, along with items measuring condom communication, in CFAs for each parent. The data from both condom and HIV items fit the hypothesized factor structure poorly, and CFA was conducted with only the condom items. HIV items were again included after moving to an EFA approach, but no clear, easily interpretable factor structure emerged when all items were included. It was decided that only communication about condom items would be used because of their conceptual relevance to both mediators and outcomes of interest, and because of increased interpretability of using only these items versus including both HIV and condom items.

METHOD

Procedure

Data were collected online. Previous studies of LGB adolescents have used data collected in a variety of ways, including convenience samples from community centers (Darby-Mullins, 2007; D'Augelli, Hershberger, & Pilkington, 1998; Rosario, Schrimshaw, Hunter, & Levy-Warren, 2009; Thoma & Huebner, 2014) and events (Floyd & Bakeman, 2006), large epidemiological datasets (Espelage, Aragon, Birkett, & Koenig, 2008; Gillmore, Chen, Haas, Kopak, & Robillard, 2011; Russell & Joyner, 2001), and online samples (Hoffman, Freeman, & Swann, 2009). Because LGB adolescents are a hidden population that is difficult to sample, all of these approaches are limited in important ways. However, samples of LGB youth collected online are more diverse with regard to attendance at LGB community centers, healthcare use, and geographic location than samples collected at LGB community centers (Hoffman et al., 2009).

Recruitment for the proposed study was conducted via advertisements on Facebook. Advertisements on Facebook can be targeted to users with specific characteristics in their profiles, and ads were targeted to adolescent males ages 14-18. Users were further targeted using keywords including “LGBT community,” “LGBT culture,” “LGBT social movements,” “Gay pride,” “Pride parade,” “Bisexuality,” “Coming out,” “Homosexuality,” “Gay-straight alliance,” “Gay, Lesbian, and Straight Education Network,” and other LGBT-relevant topics. Targeting the above topics served ads to

adolescents who expressed interests or status updates related to any of these terms.

Ads were targeted using the above keywords to males 14 – 18 in the United States. Ads were launched in February 2015, and data collection was completed in May 2015. Ads were served to Facebook users who met the above criteria in their desktop news feed, desktop right column, and mobile news feed. Ads were served a total of 76,106 times, and 6822 clicks on the ad were recorded during recruitment.

Clicking the ad opened the survey webpage, which was hosted on a secure server. Because of the anonymous nature of the survey and because some YMSM recruited had not disclosed their sexual orientation to their parents, a waiver of parental permission to participate was requested and approved by the University of Utah Institutional Review Board. On the cover page of the survey, respondents were informed of the purpose of the survey and that all answers would remain completely anonymous. To ensure participant safety, participants were asked two screening questions prior to formally entering the survey. These questions included “Do you have any concerns that completing the survey here for the next 30 minutes might reveal your sexual orientation to someone in your family who doesn’t already know about it?” and “Do you think that answering questions about your family life would cause you too much stress?” Participants who answered “Yes” to both questions were removed from survey and instructed not to complete it at this time. Participants who answered “Yes” to one question were provided with a prompt that their answers indicated they could be at risk by participating right now, and they were allowed to decide whether to exit or enter the survey. Participants who answered “No” to both questions automatically entered the survey. One hundred and ninety-three participants were automatically screened out of the survey after answering “Yes” to both questions. A

total of 3,050 participants were screened into the survey and began responding to survey questions.

The survey took 25 – 45 minutes to fully complete. Some participants left the survey before completion, providing partial data. Participants were included in analysis if they provided data sufficient for analysis, including all key study variables. If participants wished to be entered into a lottery for one of four \$50 electronic gift cards as an incentive for participation, email address was collected only after the entire survey had been completed and already imported separately into a secure database. Similar procedures have been followed in previous online recruitment of LGB adolescents (Hoffman et al., 2009).

Steps were taken to ensure the quality of the data, including removing duplicate or invalid cases. As suggested in previous online studies of YMSM (Bauermeister et al., 2012), Internet Protocol (IP) addresses were used to identify potentially invalid cases, and then data from cases with the same IP address were examined to determine whether each case was valid. Four-hundred and two cases were identified which had the same IP address as another case. After examination of cases with the same IP address, 176 cases were determined to be duplicate entries and removed, and 225 cases were determined to be unique entries and were retained. Finally, outlier analysis indicated that one case represented a pattern of inappropriate responses to study questions, and this case was removed. Of the 2874 unique cases in the data set, 949 participants completed enough to the survey to provide sufficient data for the present analysis, including assessments of all key study variables.

In addition, sensitivity analyses were conducted to determine whether random or careless responses degraded the quality of our data. Three items from the Minnesota

Multiphasic Personality Inventory infrequency scale (Arbisi & Ben-Porath, 1995) were included as a means of identifying participants who were responding carelessly or randomly, or who might have been thought disordered. The pattern of results did not change in either structural model when YMSM with high scores on this scale were omitted from analysis, so all cases were included.

Participants

YMSM were eligible to participate in the study if they reported their current biological sex was male and they identified their current sexual orientation as gay, homosexual, or bisexual. As noted above, although being “out” to a parent was not a requirement for survey completion, YMSM were included in the current analysis only if at least one of their parents were aware of their sexual orientation. The current analysis included 552 participants who met the above eligibility criteria and provided sufficient data (397 participants did not meet eligibility criteria, including 309 participants who were not out to either parent but met all other eligibility criteria). Participants were a mean age of 16.60 ($SD = 1.23$). Fifty-eight percent identified their race/ethnicity as White, 11% as Black, 11% as Latino, 2% as Asian/Pacific Islander, 1% as Native American, 17% as mixed race/ethnicity (including 4% of the total sample identifying as Black mixed), and 1% as another race/ethnicity. Forty-nine percent of participants reported their family was intact and they lived with both parents full time, 36% reported single-parent households, 10% reported splitting time between their parents’ homes, and 5% reported they did not live with their parents. Participants who provided sufficient data for analysis were more likely to identify their race/ethnicity as White and less likely to identify as Black when compared to those who did not provide sufficient data. There were no other differences between

participants who provided sufficient data and those who did not.

Measures

Items used to measure parent-adolescent communication about condoms were culled from assessments used in prior research and our qualitative data. The frequency and quality of parent-adolescent communication about sex have been identified as key factors in previous research (Dutra, Miller, & Forehand, 1999; Guilamo-Ramos, Dittus, et al., 2006), so items were selected to ensure both facets of communication were included. Specific items were included to ensure a range of topics related to condom use, including how to use condoms, and how to talk about condoms with a partner. Additionally, qualitative data indicated many families of YMSM discuss condoms in vague or superficial ways, and few families talk in detail about specific issues related to using condoms, so items were included that assessed the detail of conversations about each topic. In terms of quality of communication, previous studies of heterosexual adolescents have determined that the comfort and receptiveness of parent communication about sex (Kotchick, Dorsey, Miller, & Forehand, 1999; Whitaker, Miller, May, & Levin, 1999), the perceived expertise of parents (Guilamo-Ramos, Jaccard, Dittus, & Bouris, 2006), and the perceived trustworthiness of parents (Guilamo-Ramos, Jaccard, et al., 2006) are all important aspects of communication about sex. Themes from qualitative interviews with YMSM and their parents echoed these findings, as YMSM frequently discussed how comfortable or uncomfortable their parents were with discussing condoms and sex. Additionally, YMSM reported sexual advice from their parents is more useful if they perceive their parents as knowledgeable and trustworthy when it comes to condoms. Finally, qualitative data indicated an additional facet of the quality of communication about

condoms capturing negative parent emotionality was important within families of YMSM. YMSM, especially YMSM who reported parental rejection of their sexual orientation, reported their parents were frequently upset with them when they had parent-adolescent discussions about condoms and sex. Items were included to assess all above facets of communication, with 21 total items included.

For items that assessed frequency of communication (questions asking “how often?”), the following five-point Likert scale was used: 1: never, 2: infrequently, 3: occasionally, 4: pretty often, 5: frequently. For items that assess intensity of a previous experience or perception (e.g., “How angry is your parent when the two of you talk about condoms?” and “How knowledgeable is your parent about condoms?”), the following five-point Likert scale was used: 1: not at all, 2: slightly, 3: moderately, 4: very, 5: extremely. Participants reported whether they had one or two parental figures. If they reported they had two parental figures, they were asked each communication question once and asked to simultaneously respond for both their first parent and second parent with two Likert scales side by side.

Attitudes, perceived norms, perceived behavioral control, and intentions to use condoms were assessed with items recommended by Ajzen (2011) for the assessment of constructs of the theory of planned behavior (Ajzen, 2011). Five items measured attitudes about condoms (e.g., “How much do you like condoms?”), subjective norms were measured with four items (e.g., “How much do people who are important to you think you should use condoms?”), perceived behavioral control was measured with three items (e.g., “How confident are you that you could use condoms if you wanted to?”), and intentions to use condoms were measured by three items (e.g., “How much do you plan to use condoms

when you have sex?”). Items were assessed with five-point Likert scales. In addition, condom use behavior was assessed with a count variable of total instances of CAI (either insertive or receptive) in the past 6 months.

Self-identified race/ethnicity was assessed with one question that asked participants to select all races/ethnicities with which they strongly identified. Sexual orientation was measured with one item assessing self-identified sexual orientation. Subjective social status (SSS) was measured using the adolescent version of the 10-point McArthur Scale of Subjective Social Status (Goodman et al., 2001).

Data Analysis

First, factor analysis was conducted to determine the factor structure of our newly developed measure of parent-adolescent communication about condoms among YMSM. Confirmatory factor analysis (CFA) was undertaken to examine how the hypothesized factor structure fit observed data within data about mothers and fathers separately. Exploratory factor analysis (EFA) has been recommended as a follow up analytic procedure in the event that CFA does not identify acceptable factor structure (Schmitt, 2011; Suhr, 2006), and this method was implemented within the current study. Please see the results section for detailed description of this process.

Next, structural equation modeling was used to examine associations between variables of interest. All models were estimated using Mplus Version 7.4 (L. K. Muthén & Muthén, 2012). Initially, separate measurement models were calculated for mothers and fathers, modifications were made to the models based on fit and modification indices, and then final measurement models were fit. Measurement models included both parent communication subscales (derived from factor analysis) as well as all other relevant study

constructs (i.e., condom attitudes, norms, behavioral control, and intentions). Following specification of the final measurement models, structural associations between constructs were fit drawing from our hypothesized model. Because previous research has indicated mother and father communication is associated with adolescent sexual behaviors in distinct ways (Widman et al., 2015), separate structural equation models were estimated from mother and father data to examine hypothesized associations between latent constructs, measured covariates, and instances of reported CAI. Because CAI was measured as a count variable, its distribution was found to be positively skewed (skew = 4.6 in total sample). A natural log transformation was performed to decrease skewness, and the transformed variable evidenced adequate normality (skew = 1.1).

Because several variables evidenced inherent skewness, maximum likelihood parameter estimates with standard errors that are robust to non-normality (MLR) were used to estimate models in Mplus (B. O. Muthén & Muthén, 2010). This procedure estimates a chi-square test statistic that is equivalent to a Yuan-Bentler T2 chi-square test statistic (Yuan & Bentler, 2000). The MLR estimator uses full-information maximum likelihood procedures to address missing data (Enders & Bandalos, 2001). Global model fit was assessed with multiple indicators, including the chi-square test of model fit, Comparative Fit Index (CFI), Root Mean Square Error of Approximation (RMSEA), and the Standardized Root Mean Square Residual (SRMR). Models were deemed to demonstrate satisfactory fit when two of three fit indices met the following criteria: $CFI \geq .95$, $RMSEA \leq .06$, and $SRMR \leq .08$ (Hu & Bentler, 1999).

Indirect effects within structural models were assessed with methods recommended by MacKinnon (2008). Effects are typically calculated based on the Z

statistic, which is derived from the parameter estimate divided by its standard error, but indirect effects cannot reliably be calculated from symmetric distributions of estimates (MacKinnon, 2008; MacKinnon, Lockwood, & Williams, 2004). Thus, bias-corrected bootstrap was used to obtain asymmetric confidence intervals for indirect effects using 5000 iterations, and 95% confidence intervals that did not include zero were interpreted as significant.

RESULTS

Scale Development and Factor Analysis

Initially, CFA was completed on parent-adolescent communication about condoms items to determine whether observed data adequately fit the hypothesized measurement model. Findings indicated the hypothesized five-factor model, including latent constructs for frequency, openness, knowledgeability/trustworthiness, negative emotionality, and specificity of parent-adolescent communication about condoms, adequately described the observed data, but only when error terms for similarly worded items across factors were allowed to correlate (e.g., “How often have you and your parent talked about condoms?” with “In how much detail have you and your parent talked about condoms?”). Although removing the correlation due to item wording allowed us to see a conceptual picture consistent with what we expected, if subscales based on these factors were computed outside a latent variable context, large correlations among the subscales would result, yielding a measure that could not be used in many statistical applications (e.g., regression) because of problems with multicollinearity. Specifically, when basic scale scores were calculated using means of all items, the frequency and specificity scales, the frequency and openness scales, the specificity and openness scales, as well as the openness and knowledgeability/trustworthiness scales were highly correlated ($R_s = .88, .70, .70, \text{ and } .63$ respectively). Thus, EFA was conducted to identify alternative factor structures that would have more analytic utility than the hypothesized factor structure.

EFA using a promax rotation was conducted in Mplus using the MLR estimator. Separate EFAs were conducted for data about each parent. Initial analysis examining data about mothers and fathers separately indicated eigenvalues of the first three factors in each model exceeded one. Examination of the scree plots for each EFA indicated a sharp elbow shape following the first three eigenvalues with a large drop off for subsequent eigenvalues. In addition, a three-factor solution was more easily interpreted than the four-factor and subsequent solutions. Given the clear evidence from the scree plot pointing to a three-factor solution as well as the ease of interpretation of the three factors produced, a three-factor solution was preferred.

Items were removed from analysis if they did not contribute to an easily interpretable factor structure and failed to meet a minimum criteria of a primary rotated factor loading of at least .5 with no secondary loading of .3 or above. A minimum threshold of .5 for primary loadings is in line with recommendations to identify variables that have high potential to contribute to factor interpretation and are more likely to generalize when examined with factor analysis in other samples (Comrey & Lee, 2013). Using these criteria, it was found that three variables did not load onto any one factor when examining either mother or father data (“When you do talk about condoms with your parent, how often are other members of your family present too?” “When you do talk about condoms with your parent, how often is this a private, on-one-one discussion?” and “When your parent has given you advice about condoms, how often is this good advice?”). These three items were removed, and EFA was conducted with the remaining items. This analysis indicated that one item evidenced cross loading above the .3 threshold when examining mother data (“How open is your parent to talking about

condoms?”). This item was removed from analysis because it was the only item that did not load similarly across mother and father data, and because the primary factor loading was relatively weak in both EFAs (.50 in mother data and .57 in father data).

The final analysis included 17 variables. All variables evidenced primary factor loadings greater than .5 with no secondary loading greater than .3 in either EFA estimated from data about mothers or fathers. The same factor structure emerged within data about mothers and fathers (see Table 1). Based on the content of the factors, they were labeled as frequency/specificity of parent-adolescent communication about condoms, quality of communication, and negative emotionality of communication. The three scales demonstrated good reliability within both mother and father data ($\alpha = .95$ and $.94$, respectively, for frequency/specificity; $\alpha = .87$ and $.86$ for quality; $\alpha = .94$ and $.91$ for negative emotionality). Mean composite scores were calculated for each scale, and bivariate correlations were estimated. No problematic multicollinearity between scales was detected within either mother or father data.

Preliminary Analyses

Intercorrelations among study variables are included in Table 2 (data from participants who were out to their mother are presented below the diagonal with participants who were out to their father above). Age and SSS were associated with study variables and were included as covariates in structural models. Self-identified sexual orientation (gay/homosexual vs. bisexual) was not associated with any study variables, and it was not included in subsequent analyses. ANOVA analyses indicated race/ethnicity (coded as White, Black/African American, Latino/Hispanic, and other) was associated with study variables, and three dummy codes comparing groups to White participants

were included in structural models. Additionally, mean group differences were examined for each communication construct across mother and father data within participants who were out to each parent. Participants reported their mothers communicated with higher levels of frequency/specificity ($t(305) = -4.34, p < .001$), quality ($t(303) = -2.90, p = .004$), and negative emotionality ($t(304) = -4.197, p < .001$) when compared to their fathers.

Measurement Models

Separate measurement models were estimated for data about mothers and fathers. Latent constructs were included for frequency/specificity of parent-adolescent communication about condoms, quality of communication, negative emotionality of communication, attitudes about condoms, subjective norms for condom use, perceived behavioral control of condom use, and intentions to use condoms in each model. Parent-adolescent communication constructs were allowed to correlate with each other, and, given prior evidence that attitudes, norms, and behavioral control are correlated within samples of YMSM (Kalichman et al., 2002), these variables were allowed to correlate. The initial models demonstrated adequate fit for the mother data ($\chi^2(443) = 1289.99, p < .001$; CFI = .91, RMSEA = .06, SRMR = .05) and inadequate fit for the father data ($\chi^2(443) = 1021.44, p < .001$; CFI = .89, RMSEA = .063, SRMR = .06). Inspection of modification indices suggested that similarly worded indicators of the frequency/specificity construct were contributing to model misspecification within mother and father models because of shared variance in measurement error among these items (Hoyle, 2012), so paired items on this scale were allowed to have correlated errors. Data about mothers ($\chi^2(438) = 1054.63, p < .001$; CFI = .93, RMSEA = .05, SRMR =

.05) and fathers ($\chi^2(439) = 950.52, p < .001$; CFI = .90, RMSEA = .060, SRMR = .06) fit the modified measurement model sufficiently. No further modifications were made to either measurement model.

Structural Models

After obtaining adequate fit for each parent measurement model, we then specified paths between latent constructs and measured covariates. Models were estimated separately for each parent. Paths from each parent communication construct to attitudes, subjective norms, behavioral control, and intentions were included. Paths from attitudes, subjective norms, and behavioral control to intentions were also included. Paths from intentions and behavioral control to instances of condomless anal intercourse (CAI) were included, but paths from communication constructs, attitudes, and norms to CAI were not included because they were not theoretically indicated. Age, SSS, and race/ethnicity were included in each model, and paths from demographic covariates to communication constructs were included. Factor loadings and path coefficients from the mother and father models appear in Tables 3 and 4, respectively. Model fit was sufficient for both data about mothers ($\chi^2(594) = 1379.14, p < .001$; CFI = .92, RMSEA = .05, SRMR = .05) and fathers ($\chi^2(594) = 1173.60, p < .001$; CFI = .90, RMSEA = .06, SRMR = .05). Results from data about mothers and fathers are presented in Figures 1 and 2, respectively.

Constrained SEM models were estimated to determine whether the same model sufficiently fit data about mothers and fathers. First, data about fathers were fit to a model in which nonsignificant paths in the mother model were constrained to zero. Chi-square difference testing demonstrated that the fit to the constrained father model was not

significantly worse ($\chi^2(35) = 37.93, p = .337$). However, when mother data were fit to a model where nonsignificant paths within the father model were constrained to zero, the constrained model evidenced degraded fit ($\chi^2(47) = 218.13, p < .001$). Thus, the same model did not adequately fit data about mothers and fathers.

Mediated effects were relevant to our hypotheses, and indirect effects in both structural models were examined to determine whether parent-adolescent communication constructs exerted influence on intentions to use condoms and CAI. In the mother model (see Table 5), frequency/specificity of communication was positively associated with intentions to use condoms via attitudes, quality of communication was positively associated with intentions via attitudes and subjective norms, and negative emotionality was negatively associated with intentions via subjective norms. In addition, in the mother model, frequency/specificity of communication was negatively associated with CAI via attitudes via intentions, quality of communication was negatively associated with CAI via attitudes and subjective norms via intentions, and negative emotionality was positively associated with CAI via subjective norms via intentions. Additionally, quality of communication was also positively associated with CAI via intentions in the same model, indicating that higher quality communication was associated with both higher and lower risk of CAI via different mechanisms. Finally, negative emotionality was also negatively associated with CAI via intentions. No significant mediated effects were found in the father model.

Posthoc analyses were also conducted to examine why perceived behavioral control was unassociated with intentions to use condoms or CAI in our sample since it is typically predictive of intentions and CAI in other samples of YMSM (e.g., Kalichman et

al., 2002). One possibility is that behavioral control is only associated with CAI when a participant is the insertive partner (i.e., “topping”) and has more control over the sexual encounter, but no different patterns of association between behavioral control and either condomless insertive or receptive anal intercourse were identified in posthoc analyses. Additionally, behavioral control was unassociated with total instances of anal intercourse, indicating that YMSM who have anal intercourse more often do not perceive higher behavioral control, including during condomless instances.

Table 1
Parent-Adolescent Communication About Condoms Items Included in Analysis, Including Factor Loadings from EFA and Composition of Each Factor Within Data About Mothers and Fathers

	Promax Rotated Factor Loadings					
	Data about Mothers			Data about Fathers		
Factor:	1	2	3	1	2	3
Frequency/Specificity of Communication about Condoms						
How often have you and your parent talked about condoms?	0.66	0.16	0.17	0.60	0.19	0.14
How often has your parent explained how to put on a condom?	0.78	-0.06	-0.06	0.77	-0.08	-0.03
How often have you and your parent talked about how to get condoms?	0.88	-0.02	-0.03	0.91	-0.07	-0.01
How often have you and your parent talked about how to discuss condom use with a sexual partner?	0.86	-0.03	0.01	0.85	-0.05	-0.04
In how much detail have you and your parent talked about condoms?	0.72	0.21	0.13	0.68	0.26	0.09
In how much detail have you and your parent talked about how to put on a condom?	0.86	-0.05	-0.05	0.85	-0.04	-0.02
In how much detail have you and your parent talked about how to get condoms?	0.92	-0.04	-0.01	0.91	0.00	-0.02
In how much detail have you and your parent talked about how to discuss condom use with a sexual partner?	0.87	-0.01	0.00	0.86	0.02	-0.03
Quality of Communication about Condoms						
How open is your parent to answering any question about condoms?	0.24	0.07	0.53	0.23	0.09	0.51
How knowledgeable is your parent about condoms?	0.14	0.01	0.56	0.10	-0.05	0.58
How much do you trust what your parent has to say about condoms?	-0.02	-0.08	0.81	-0.04	-0.08	0.84
How honest are your parents when they talk with you about condoms?	-0.07	-0.01	0.91	-0.09	0.04	0.90
How much does your parent look out for what's best for you when the two of you talk about condoms?	-0.04	-0.02	0.84	-0.02	-0.01	0.82
Negative Emotionality of Communication about Condoms						
How upset is your parent when the two of you talk about condoms?	0.01	0.86	-0.03	0.07	0.80	0.00
How angry is your parent when the two of you talk about condoms?	0.00	0.94	0.01	-0.03	0.98	0.00
How frustrated is your parent when the two of you talk about condoms?	0.01	0.97	0.08	-0.05	0.92	0.03
How worried is your parent when the two of you talk about condoms?	-0.02	0.78	0.09	0.05	0.81	0.09

Table 2:

Intercorrelations Among Study Variables Within Samples of Participants Who Were Out to Their Mother ($n = 523$) and Their Father ($n = 328$)

	Age	SSS	Frequency/ Specificity	Quality	Negative Emotionality	Attitudes	Subjective Norms	Behavioral Control	Intentions	CAI
Age	--	-0.095	0.007	0.071	-0.027	-0.116*	0.009	0.070	-0.117*	0.142*
SSS	-0.007	--	0.006	0.082	0.005	0.162**	0.231**	0.154**	0.224**	-0.119
Frequency/Specificity	-0.039	0.030	--	0.493**	0.476**	0.176**	0.181**	0.229*	0.130*	-0.034
Quality	0.023	0.118*	0.543**	--	0.309**	0.142*	0.290**	0.294**	0.130*	-0.067
Negative Emotionality	-0.017	0.011	0.388**	0.352**	--	0.035	0.045	0.121*	0.018	0.104
Attitudes	-0.055	0.149**	0.235**	0.227**	0.040	--	0.469**	0.357**	0.662**	-0.415**
Subjective Norms	0.028	0.184**	0.227**	0.349**	0.076	0.491**	--	0.305**	0.470**	-0.371**
Behavioral Control	0.111*	0.113*	0.234*	0.259**	0.087	0.393**	0.321**	--	0.335**	-0.074
Intentions	-0.063	0.164**	0.177**	0.178**	0.113*	0.655**	0.501**	0.359**	--	-0.572**
CAI	0.146**	-0.140*	-0.036	0.005	0.061	-0.400**	-0.333**	-0.073	-0.530**	--

Note. Data from participants who were out to their mother presented below the diagonal, with data from participants out to their father above; correlations with CAI calculated only among participants reporting sexual activity ($n = 316$ below diagonal and 195 above); * $p < .05$; ** $p < .01$

Table 3

SEM Results Illustrating Associations Between Parent-Adolescent Communication About Condoms, Determinants of Condom Use Behavior, and CAI Among Participants Who Were Out to Their Mother (n = 523)

Variable	Estimate	SE	Z	P	β
Directional Structural Effects					
Frequency/Specificity of Communication --> Attitudes about Condoms	0.15	0.05	2.88	0.004	0.17
Frequency/Specificity of Communication --> Subjective Norms for Condom Use	0.07	0.05	1.45	0.147	0.09
Frequency/Specificity of Communication --> Perceived Behavioral Control for Condom Use	0.14	0.06	2.47	0.014	0.18
Frequency/Specificity of Communication --> Intentions to Use Condoms	-0.07	0.05	-1.35	0.178	-0.06
Quality of Communication --> Attitudes about Condoms	0.17	0.06	2.77	0.006	0.20
Quality of Communication --> Subjective Norms for Condom Use	0.32	0.07	4.68	< 0.000	0.42
Quality of Communication --> Perceived Behavioral Control for Condom Use	0.15	0.06	2.43	0.015	0.21
Quality of Communication --> Intentions to Use Condoms	-0.14	0.05	-2.60	0.009	-0.14
Negative Emotionality of Communication --> Attitudes about Condoms	-0.14	0.06	-2.43	0.015	-0.12
Negative Emotionality of Communication --> Subjective Norms for Condom Use	-0.12	0.05	-2.22	0.026	-0.11
Negative Emotionality of Communication --> Perceived Behavioral Control for Condom Use	-0.03	0.05	-0.63	0.530	-0.03
Negative Emotionality of Communication --> Intentions to Use Condoms	0.20	0.07	3.02	0.003	0.14
Attitudes about Condoms --> Intentions to Use Condoms	0.77	0.10	7.88	< 0.000	0.61
Subjective Norms for Condom Use --> Intentions to Use Condoms	0.37	0.11	3.34	0.001	0.28
Perceived Behavioral Control for Condom Use --> Intentions to Use Condoms	0.01	0.11	0.05	0.964	0.00
Intentions to Use Condoms --> Condomless Anal Intercourse	-0.82	0.09	-8.76	< 0.000	-0.59
Perceived Behavioral Control for Condom Use --> Condomless Anal Intercourse	0.20	0.17	1.17	0.242	0.10
Latent Variable Correlations					
Frequency/Specificity of Communication <> Quality of Communication	0.54	0.06	8.75	< 0.000	0.58
Frequency/Specificity of Communication <> Negative Emotionality of Communication	0.28	0.04	8.01	< 0.000	0.42
Quality of Communication <> Negative Emotionality of Communication	0.26	0.04	6.71	< 0.000	0.36
Attitudes about Condoms <> Subjective Norms for Condom Use	0.30	0.04	7.90	< 0.000	0.59
Attitudes about Condoms <> Perceived Behavioral Control for Condom Use	0.25	0.05	5.62	< 0.000	0.52
Subjective Norms for Condom Use <> Perceived Behavioral Control for Condom Use	0.20	0.05	4.03	< 0.000	0.46

Note. All structural effects estimated while covarying age, subjective social status, and race/ethnicity. Estimate = Unstandardized regression weight; SE = standard error of Estimate; Z = Z-test of Estimate = 0; p = p -value for Z-test; β = standardized regression coefficient.

Table 4:

SEM Results Illustrating Associations Between Parent-Adolescent Communication About Condoms, Determinants of Condom Use Behavior, and CAI Among Participants Who Were Out to Their Father (n = 328)

Variable	Estimate	SE	Z	P	β
Directional Structural Effects					
Frequency/Specificity of Communication --> Attitudes about Condoms	0.16	0.09	1.94	0.053	0.15
Frequency/Specificity of Communication --> Subjective Norms for Condom Use	0.11	0.08	1.44	0.149	0.11
Frequency/Specificity of Communication --> Perceived Behavioral Control for Condom Use	0.12	0.07	1.70	0.089	0.11
Frequency/Specificity of Communication --> Intentions to Use Condoms	-0.03	0.08	-0.32	0.746	-0.02
Quality of Communication --> Attitudes about Condoms	0.11	0.07	1.52	0.128	0.13
Quality of Communication --> Subjective Norms for Condom Use	0.28	0.08	3.56	<0.000	0.34
Quality of Communication --> Perceived Behavioral Control for Condom Use	0.21	0.08	2.86	0.004	0.27
Quality of Communication --> Intentions to Use Condoms	-0.06	0.07	-0.81	0.416	-0.05
Negative Emotionality of Communication --> Attitudes about Condoms	-0.11	0.10	-1.09	0.275	-0.09
Negative Emotionality of Communication --> Subjective Norms for Condom Use	-0.11	0.06	-1.78	0.075	-0.10
Negative Emotionality of Communication --> Perceived Behavioral Control for Condom Use	0.04	0.08	0.54	0.588	0.04
Negative Emotionality of Communication --> Intentions to Use Condoms	-0.00	0.09	-0.04	0.968	-0.00
Attitudes about Condoms --> Intentions to Use Condoms	0.80	0.11	7.03	<0.000	0.63
Subjective Norms for Condom Use --> Intentions to Use Condoms	0.23	0.13	1.78	0.075	0.18
Perceived Behavioral Control for Condom Use --> Intentions to Use Condoms	0.04	0.10	0.37	0.709	0.03
Intentions to Use Condoms --> Condomless Anal Intercourse	-0.90	0.10	-9.13	<0.000	-0.61
Perceived Behavioral Control for Condom Use --> Condomless Anal Intercourse	0.14	0.19	0.76	0.450	0.07
Latent Variable Correlations					
Frequency/Specificity of Communication <> Quality of Communication	0.37	0.06	5.73	<0.000	0.50
Frequency/Specificity of Communication <> Negative Emotionality of Communication	0.27	0.04	7.17	<0.000	0.49
Quality of Communication <> Negative Emotionality of Communication	0.23	0.05	4.54	<0.000	0.32
Attitudes about Condoms <> Subjective Norms for Condom Use	0.32	0.05	6.10	<0.000	0.57
Attitudes about Condoms <> Perceived Behavioral Control for Condom Use	0.24	0.06	4.35	<0.000	0.43
Subjective Norms for Condom Use <> Perceived Behavioral Control for Condom Use	0.21	0.07	3.23	0.001	0.41

Note. All structural effects estimated while covarying age, subjective social status, and race/ethnicity. Estimate = Unstandardized regression weight; SE = standard error of Estimate; Z = Z-test of Estimate = 0; p = p -value for Z-test; β = standardized regression coefficient.

Table 5

Indirect Effects Between Mother-Adolescent Communication About Condoms and Intentions and CAI Among Participants Who Were Out to Their Mother (n = 523)

	Unstandardized estimates	95% Confidence Interval
Frequency/Specificity of Communication		
Effect on CAI mediated directly through intentions	0.06	-0.02 - 0.15
Effect on CAI mediated through:		
Attitudes --> Intentions	-0.10 *	-0.18 - -0.03
Subjective Norms --> Intentions	-0.02	-0.07 - 0.01
Perceived Behavioral Control --> Intentions	0.00	-0.03 - 0.02
Effect on Intentions mediated through:		
Attitudes	0.12 *	0.04 - 0.21
Subjective Norms	0.03	-0.01 - 0.08
Perceived Behavioral Control	0.00	-0.03 - 0.04
Quality of Communication		
Effect on CAI mediated directly through intentions	0.12 *	0.02 - 0.22
Effect on CAI mediated through:		
Attitudes --> Intentions	-0.11 *	-0.21 - -0.03
Subjective Norms --> Intentions	-0.10 *	-0.19 - -0.04
Perceived Behavioral Control --> Intentions	0.00	-0.05 - 0.03
Effect on Intentions mediated through:		
Attitudes	0.13 *	0.04 - 0.24
Subjective Norms	0.12 *	0.05 - 0.22
Perceived Behavioral Control	0.00	-0.03 - 0.05
Negative Emotionality of Communication		
Effect on CAI mediated directly through intentions	-0.16 *	-0.29 - -0.07
Effect on CAI mediated through:		
Attitudes --> Intentions	0.09 *	0.02 - 0.19
Subjective Norms --> Intentions	0.04 *	0.01 - 0.09
Perceived Behavioral Control --> Intentions	0.00	-0.01 - 0.02
Effect on Intentions mediated through:		
Attitudes	-0.11 *	-0.21 - -0.03
Subjective Norms	-0.04 *	-0.11 - -0.01
Perceived Behavioral Control	0.00	-0.02 - 0.01

Note. * indicates significance at .05 level; 95% confidence intervals estimated with bootstrap standard errors.

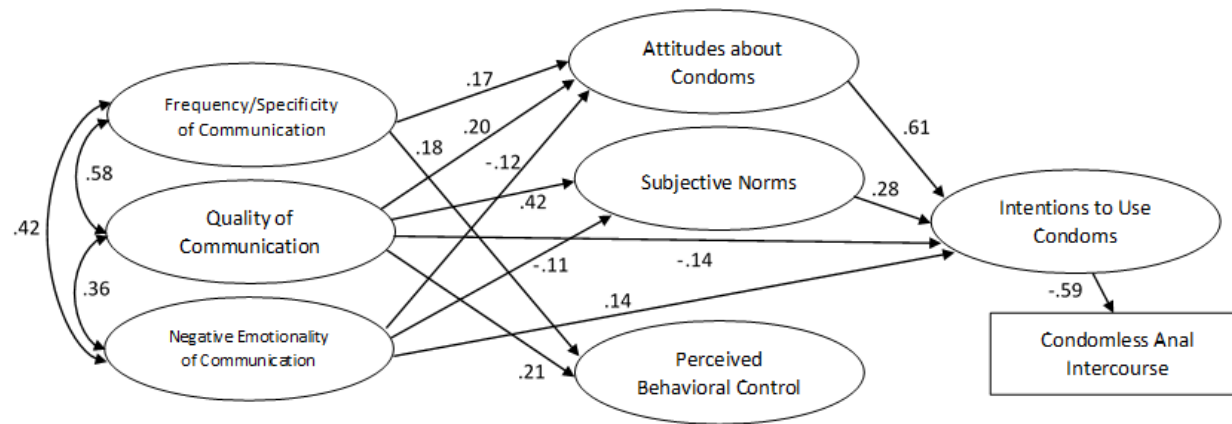


Figure 1. Structural equation model results for participants who were out to their mother. Paths significant at $p < .05$ represented by solid line. Standardized estimate included for each path. Correlations between attitudes, norms, and behavioral control and all estimated non-significant paths omitted to enhance clarity.

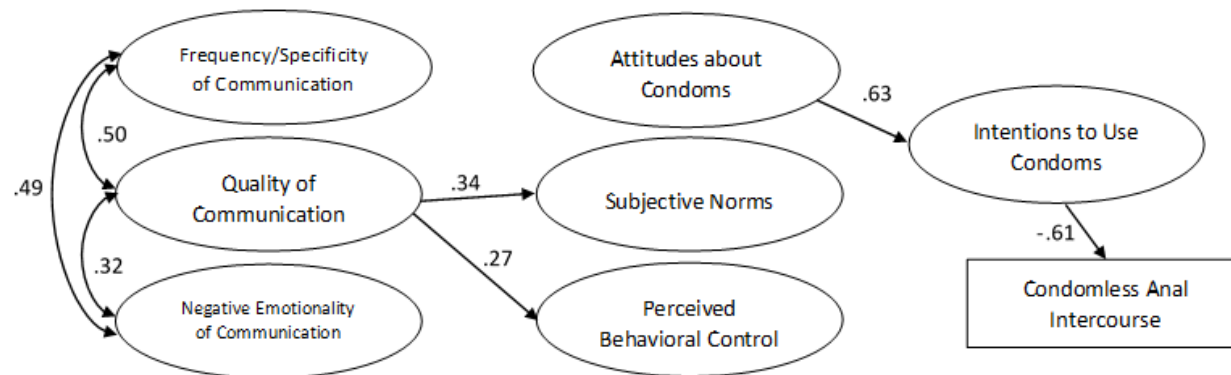


Figure 2. Structural equation model results for participants who were out to their father. Paths significant at $p < .05$ represented by solid line. Standardized estimate included for each path. Correlations between attitudes, norms, and behavioral control and all estimated non-significant paths omitted to enhance clarity.

DISCUSSION

Parent-adolescent communication about condoms is associated with determinants of condom use behavior among YMSM, and indirectly, with condom use itself. The measure of parent-adolescent communication about condoms developed for this study had the same factor structure across perceptions of mothers and fathers, and while the factor structure deviated from hypothetical predictions somewhat, frequency/specificity, quality, and negative emotionality of communication were identified as key constructs of parent-adolescent communication about sex among YMSM. Mother-adolescent communication that is perceived by youth as frequent, specific, high quality, and low in negative emotionality is associated with more positive attitudes about condoms, higher subjective norms, and higher perceived behavioral control among YMSM. In addition, indirect effects were identified that linked more positive mother-adolescent communication about sex with higher intentions to use condoms and fewer instances of CAI. Father-adolescent communication about condoms was not associated with as many determinants of behavior, as only quality of communication was positively associated with norms and behavioral control. No indirect associations with intentions or CAI were found in the father model.

Interestingly, indirect effects within the mother model demonstrated that the quality of mother-adolescent communication about condoms might both negatively and positively influence intentions to use condoms and subsequent CAI. Higher quality of

communication was associated with more favorable attitudes and norms, and these protective effects were then indirectly associated with increased intentions and lower CAI. However, after controlling for attitudes, norms, and perceived behavioral control, higher quality of communication was also associated with lower intentions to use condoms and, indirectly, higher CAI. Additionally, lower negative emotionality was associated with better attitudes and norms, but, when controlling for attitudes and norms, higher negative emotionality was associated with higher intentions.

Although surprising, these results could help to explain prior findings that more frequent parent-adolescent communication about sex was linked with CAI within another sample of YMSM who were out to their parents (Thoma & Huebner, 2014). This previous study measured only frequency of communication about sex, and the current findings indicate that it could be possible for mothers to erode YMSM intentions to use condoms based on the way they communicate. It is possible that higher quality communication (i.e., comfortable and confident communication) could yield more favorable attitudes and norms, but the same ease of communication could also inadvertently decrease the perceived urgency of communications about sexual health in the eyes of YMSM or communicate permissiveness around sex more generally. Future studies of YMSM should seek to examine this association further, including potential mediators such as not communicating that using condoms is imperative, parents divulging inappropriate details about their own sexual health, and parental permissiveness. With regard to negative emotionality, less negative emotionality is associated with more favorable subjective norms and attitudes, and, at the same time, more negative emotionality is associated with higher intentions to use condoms. Perhaps

expressing negative emotions during communication motivates YMSM to take their mothers' advice more seriously, allowing them to understand that their sexual health is important to their mother, and they then intend to use condoms to ensure their health is preserved.

Results from the current study not only inform us of how parent-adolescent communication about condoms functions within families of YMSM, but they also shed light on mechanisms underlying associations found among heterosexual adolescents in the broader literature. Researchers have found that mothers exert a small protective influence on adolescent sexual behavior by communicating with their adolescents about sex, but that fathers do not exert any influence (Widman et al., 2015). The current study shows that associations between communication about sex and safer sex behaviors are mediated by determinants of condom use behavior, and mothers exert a stronger, more wide-reaching influence on these determinants. The quality of father-adolescent communication was linked with norms and perceived behavioral control in our data, indicating that fathers could still play an important role in adolescent sexual health education, even if this effect is not strong enough to see evidence of an influence on sexual behaviors. Researchers should attempt to generalize these findings to heterosexual adolescents by examining intrapersonal determinants of condom use as potential mediators underlying the association between parent-adolescent communication about sex and safer sex behavior.

Differential patterns of results across mothers and fathers could be attributed to multiple factors. YMSM reported their mothers communicated about condoms with more frequency/specificity, quality, and negative emotionality than their fathers, and the

relative dearth of significant paths in the father model could result from lower levels of communication constructs. This explanation could hold true for heterosexual adolescents as well, as fathers have been found to communicate about sex less frequently and with lower quality than mothers in previous research (Dilorio et al., 2003; Dutra et al., 1999; Sneed, 2008). Additionally, fewer fathers of YMSM lived at home with their child full time (61% of fathers vs. 78% of mothers), so fathers could have fewer opportunities to have discussions about sex with their sons. Similarly, fewer YMSM reported their father was their biological father (81% vs. 91% of mothers), and it might be more difficult for nonbiological parents to discuss difficult topics, such as sex, with their children. Finally, father-son communication about sex could have less saliency than mother-son communication with regard to adolescent sexual health. Our qualitative data indicated that mothers often take on the primary role of discussing issues related to sex with YMSM, and fathers may not exert as strong of an influence because they often have a secondary role in communicating about this topic.

It is important to note that the findings in this study can only be generalized to YMSM whose parents are aware of their sexual orientation. Previous research has shown level of outness to parents can moderate associations between parent-adolescent communication about sex and CAI (Thoma & Huebner, 2014), and future research should seek to explicate the potentially different mechanisms underlying this association for YMSM with differing levels of outness to parents. YMSM who are out to their parents might benefit from parent-adolescent communication about sex more than YMSM who are not. Parents who do not know their son is gay or bisexual cannot specifically tailor their messages about sex to the unique needs of YMSM, and it could be more difficult for

them to shape determinants of their sons' condom use behavior. Additionally, YMSM are more likely to disclose their sexual orientation to their parents when they have strong, supportive relationships with them (Heatherington & Lavner, 2008), so parent-adolescent relationship quality could predict both disclosure and communication patterns. Higher relationship quality likely sets the stage for having more frequent and effective conversations about difficult topics, including sex and sexuality.

The current investigation is limited by its cross-sectional design. YMSM reported on their current attitudes, perceived norms, perceived behavioral control, and intentions as well as prior experiences of communication with their parents about condoms, so the structural models pointing up until intentions are consistent with a theoretical model in which these variables are temporally sequenced and causally influence one another. However, given the cross-sectional nature of the data, we cannot rule out other directions of effect. In particular, caution must be used when interpreting associations with CAI within the structural models, as this behavior was measured within the previous six months and could have contributed to the formation of attitudes and intentions or spurred conversations about condoms between parents and YMSM. Future work should employ longitudinal designs to disentangle bidirectional effects between sexual behavior, determinants of sexual behavior, and communication about sex. The study is also limited by the use of only YMSM's reports of their communication with their parents, and triangulation of results from multiple reporters within the family would allow researchers to more thoroughly examine the dynamic nature of communication between YMSM and their parents. Finally, this study did not examine other family factors that evidence associations with adolescent sexual behavior, including parent-adolescent relationship

quality and parental monitoring (Buhi & Goodson, 2007; Markham et al., 2010), and future work should strive to investigate integrated models of parental influence that account for multiple family factors concurrently.

The current study contributes to the parent-adolescent communication about sex literature by using a theory-grounded framework, and findings indicate that mothers can communicate about condoms with YMSM in a way that could contribute to lower HIV-related sexual risk. Researchers have advocated for family-focused interventions for YMSM (Garofalo et al., 2008), and the current findings indicate that enhanced mother-adolescent communication is a potential avenue for future intervention work. While father communication was unassociated with condom use intentions in the current study, no negative paternal associations were identified, and future interventions can only benefit from including all parents. When YMSM first come out and become sexually active, many do not have access to LGB community resources that provide information about sexual health, and parents could be included in interventions to assist in providing sexual health education at home before YMSM have access to other resources. Prevention efforts designed to help parents discuss sex with YMSM in a way that is specific to their sexual health needs could prove fruitful, and interventions would need to include components to help parents to build knowledge of and comfort with condoms, HIV, and same-sex sexual behaviors. Helping parents to communicate about condoms in a way that is well-informed, comfortable, specific, and calm, yet firm, has the potential to increase YMSM intentions to use condoms and reduce their HIV-related sexual risk behaviors.

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